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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,745	03/21/2007	Nobuo Nakano	21398-00038-US1	4479
30678 7590 12/22/2008 CONNOLLY BOVE LODGE & HUTZ LLP 1875 EYE STREET, N.W. SUITE 1100 WASHINGTON, DC 20006				
EXAMINER				
XU, XIAOYUN				
ART UNIT		PAPER NUMBER		
1797				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/578,745

**Applicant(s)**

NAKANO ET AL.

**Examiner**

ROBERT XU

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
- Paper No(s)/Mail Date 11/2/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 6 and 7** are rejected under 35 U.S.C. 102(b) as being anticipated by Leiner (US Patent 5,496,521, IDS).

In regard to Claim 6, Leiner discloses a gas detecting device comprising:

a gas exposure portion (gas permeable membrane 9) that open to a sampling flow path (see col. 4, lines 4-5, Figure 1); and

an optical density measuring portion (light source 14 and detector 15) provided a light-emitting means (light source 14) facing the exposure portion and light receiving means (detector 15) (see col. 4, lines 28-29, Figure 1),

wherein the exposure portion and the optical density measuring portion are oppositely disposed in a separateable manner (see Figure 1), and a gas detecting element is housed so that a gas inflow side (sample chamber 6) of the gas detecting element faces the gas exposure portion (gas permeable membrane 9) and an optical density detection portion of the gas detecting element faces the optical density detection measuring portion (light source 14 and detector 15) (see col. 4, line 28-29, Figure 1).

In regard to Claim 7, Leiner discloses that the optical density detection portion (light source 14 and detector 15) and the gas detecting element are constituted so as to

maintain air tightness (see col.4, lines 34-38, Figure 1). One embodiment is to attach the gas detecting element to the lower part 3 of the housing 1 by a pressed rim 18 (see col.4, lines 34-38, Figure 1).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Leiner.

In regard to Claim 1, Leiner discloses a gas detecting element comprising:  
a hollow container (reaction space 8) (see col. 4, line 2, Figure 1);  
an optical density detection device on one side of the container to allow optical density detection (light source 14 and detector 15) (see col. 4, lines 28-29).  
a gas –permeable window formed on the opposing side of the container (gas permeable membrane 9) (see col. 4, lines 4-5, Figure 1);

a reagent that exhibits coloration by reaction with a gas to be measured housed in a space between the window and the detection device (indicator layer 10) (see col. 4, line 4, Figure 1).

Leiner does not specifically disclose that the optical density detection device has an optical window. However, it is common and necessary to separate the chemicals from the optical detection device by an optical window that is not gas-permeable. At time of the invention, it would have been obvious to one of ordinary skill in the art to have an optical window that is not gas-permeable between the reagent and the optical detection device so that the chemicals will not interact with the detection device.

In regard to Claims 2 and 3, Leiner discloses a light source (14) and an optical density detector (15) that are affixed to a frame (supporting layer 16) that constitutes the container. At the time of the invention, it would have been obvious to one of ordinary skill in the art to have a transparent non-permeable film between the chemical chamber and the optical density detector in order to prevent reaction between chemical and the detector.

In regard to Claim 4, Leiner discloses that reagent absorbent material (indicator layer 10) impregnated with the reagent (indicator substance) (see col. 3, lines 46-48) is housed in the space (reaction space 8) (see Figure 1).

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Leiner in view of Sullivan et al. (US Patent 6,207,110, IDS) (Sullivan).

In regard to Claim 5, Leiner does not disclose that a light-reflective surface is formed on the side of the gas-permeable window facing the reagent absorbent material.

Sullivan discloses an optical sensor that has liquid permeable metallic coating. The metallic coating is deposited directly and is in physical contact with the sensing membrane. When light from a light source is shone through the substantially light transmissive substrate onto the sensing membrane, the metallic coating reflects back the excitation light as well as fluorescence light generated by the sensor such that substantially no light reaches the sample outside the chamber where the light may be scattered and/or absorbed by the sample. Accordingly, the accuracy and repeatability of the sensor is improved (see abstract). At the time of the invention, it would have been obvious to one of ordinary skill in the art to use a light-reflective surface formed on the side of the gas-permeable window facing the reagent absorbent material so that the excitation light can be reflected back such that no light reaches the sample outside chamber where the light may be scattered and/or absorbed by the sample, because Sullivan teaches that this would improve the accuracy and repeatability of the sensor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT XU whose telephone number is (571)270-5560. The examiner can normally be reached on Mon-Thur 7:30am-5:00pm, Fri 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

12/18/2008

/Yelena G. Gakh/  
Primary Examiner, Art Unit 1797

RX